



Root Causes Cover Sheet

Economic Growth Region # 11 : Southwestern Indiana

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Strategic Skills Initiative

Economic Growth Region 11

Root Causes

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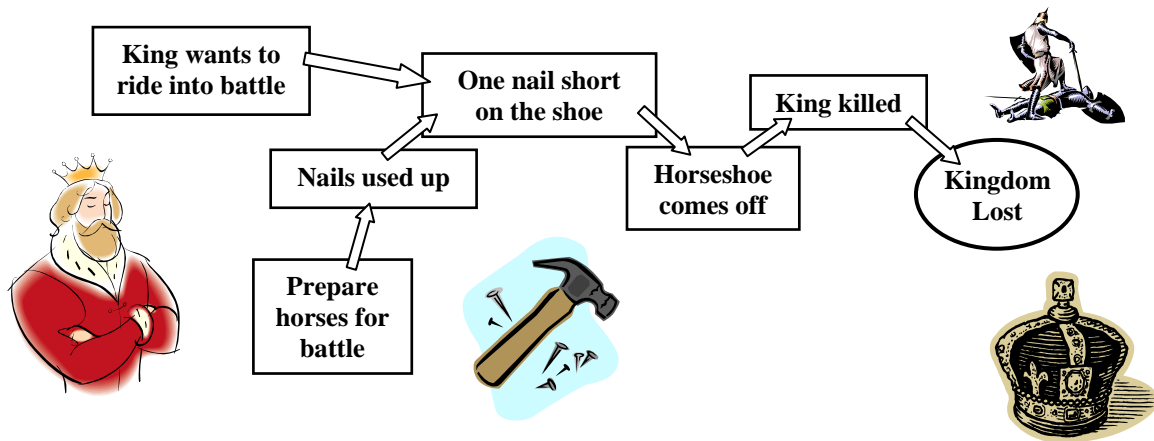
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Executive Summary

Labor Market Inefficiencies are at the Heart of Shortages

Identifying a “root cause” looks deceptively simple on the surface. A classical way of depicting a root cause is the story of how a kingdom was lost --- because of a nail shortage. The theory is that if any part of the sequence had been prevented, the kingdom would not have been lost.

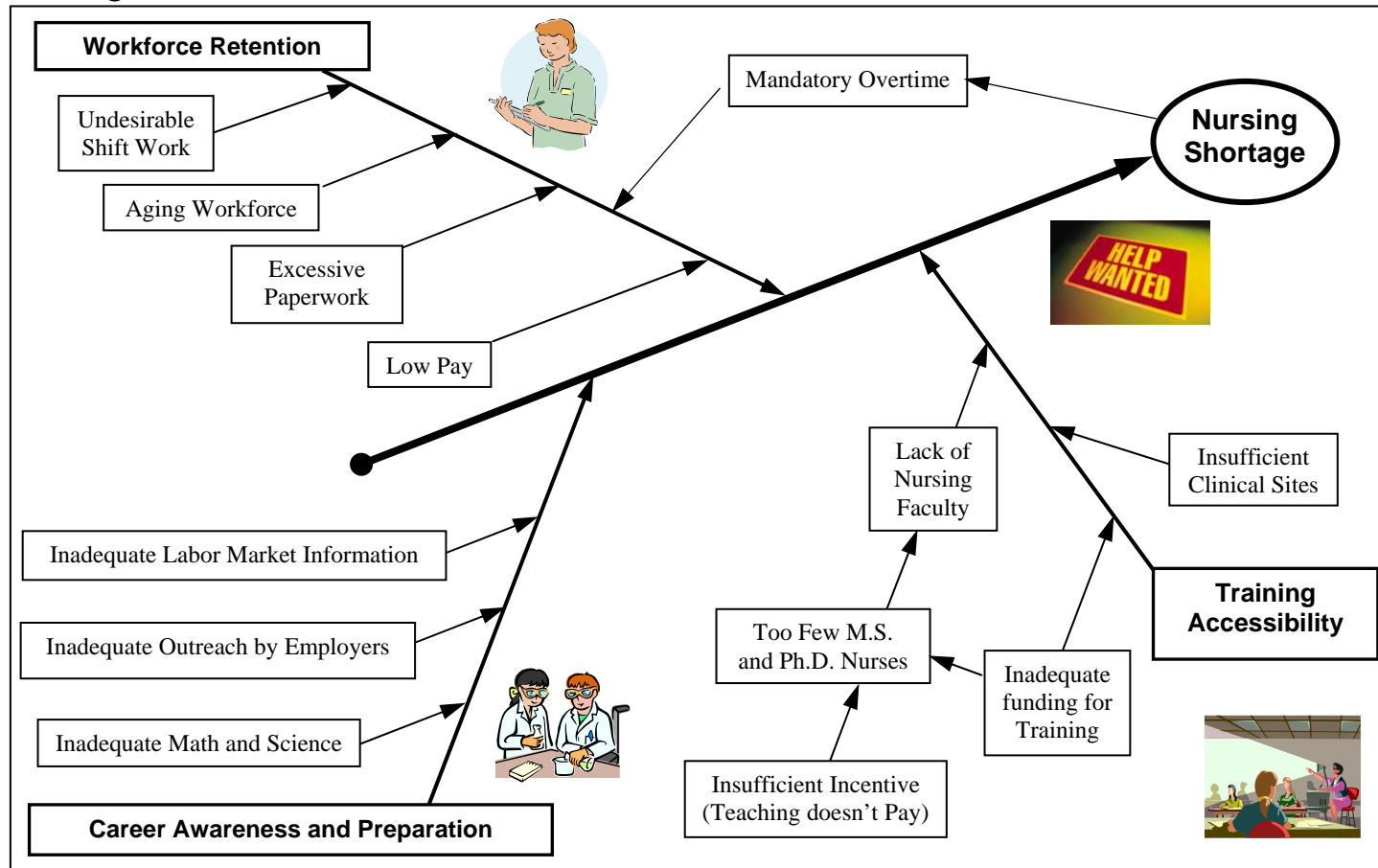


Complex public/private systems are not so easily reduced to single causes. They are driven by:

- Social perceptions that are influenced by the media and history;
- Global economics that are influenced by natural resource availability, politics, weather, and disease;
- Public policy in the form of statutes, regulations, and policy created by people far removed from the impact; and
- The vagaries of individual choices.

In the graphic above, two separate event 'branches' had to occur together for the sequence to continue. If we try to build a similar line of sight for nursing shortages, for example, the branches that act simultaneously are many.

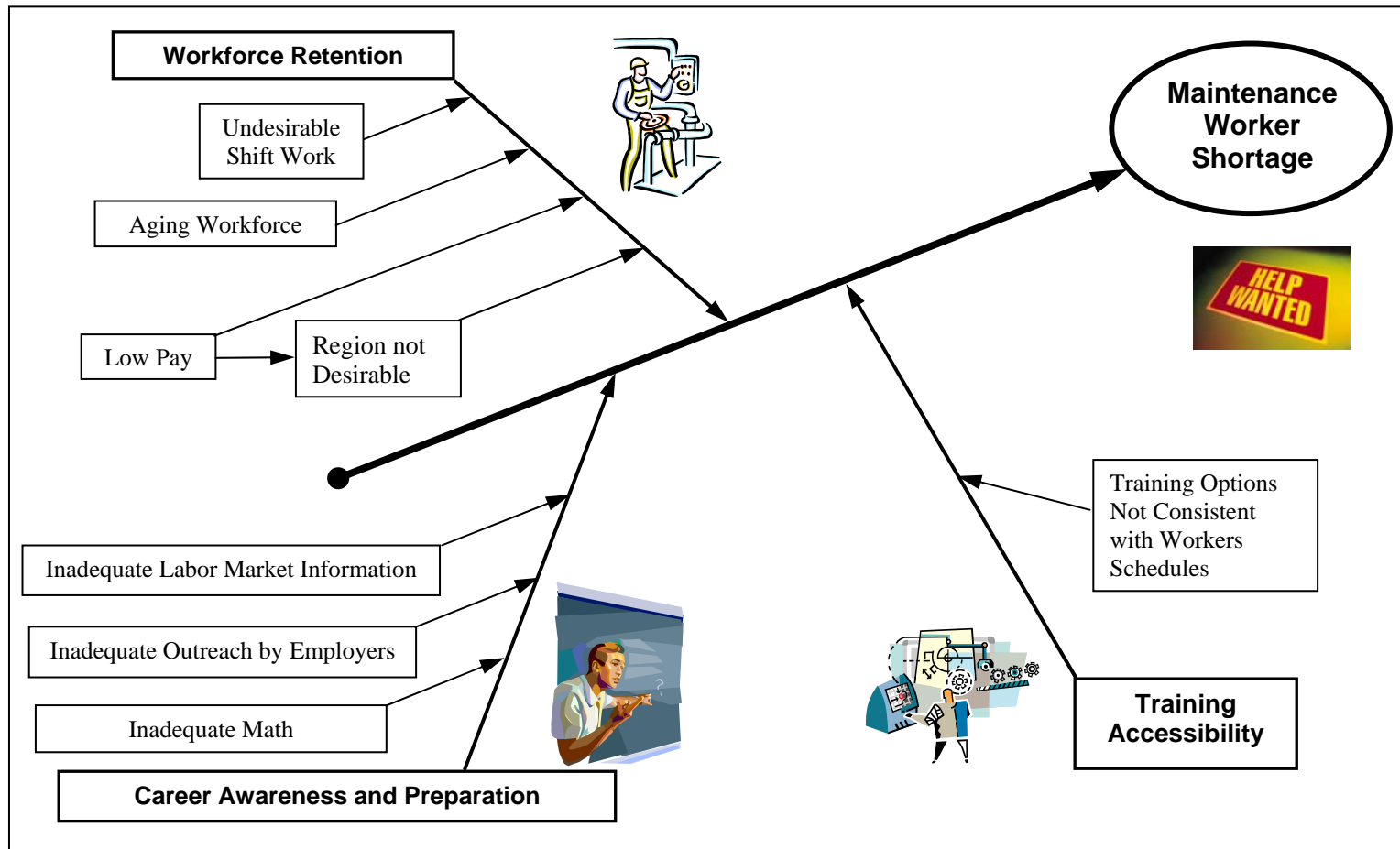
Nursing Shortage Causes



The diagram is not a straight line; in fact, there is at least one circular cause and effect in that the nursing shortage in hospitals leads to mandatory overtime for the nurses who are there, which causes dissatisfaction and more nurses to leave the hospital environment, which increases the shortage and thus increases overtime. Each of the causes could be taken even a step further. For example, a cause for nursing instructors being underpaid compared to clinical work is that societal perceptions of teaching are negative. We don't value the work, and hence don't pay for it.

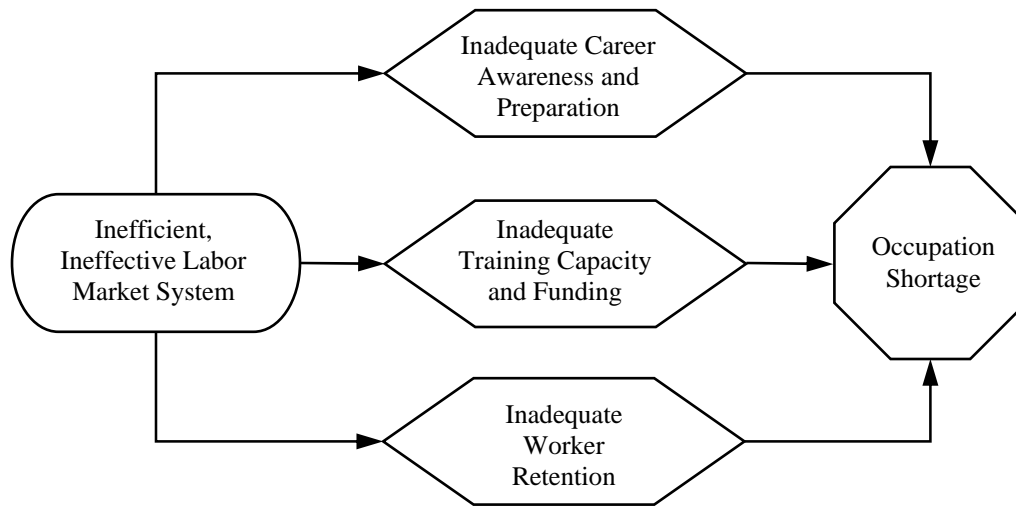
The manufacturing diagram looks very similar.

Maintenance Occupation¹ Shortage Causes



¹ Industrial Machine Maintenance, Maintenance and Repair Workers, and Maintenance Workers Machinery will be treated as a group because their skill sets and root causes are highly similar.

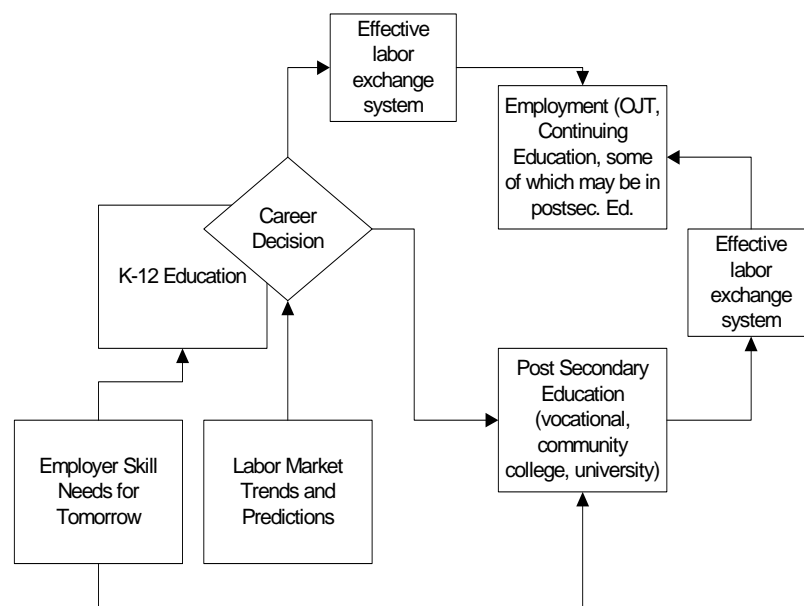
Ultimately, inefficient, ineffective labor markets are at the root of all shortages. In fact, if we were to simplify the preceding two diagrams, it would look like this:



In an efficient labor market system, employers communicate their skill needs for *tomorrow* to K-12 education and postsecondary education. Today's first grader will not be in the workplace for another 12-16 years or more, so tomorrow's skills are important. A college freshman may not be in employment related to his/her career choice for 3 - 6 years (many students are working, experience gaps in their enrollment, or change majors, so even 2-year programs can take 3 years to complete, and university students are increasingly taking up to 6 years to finish a 4-year degree).

Efficient Labor Market System

If the labor market is functioning efficiently, students are also receiving and using information about labor market trends and predictions to make a career decision consistent with their interests, aptitudes, and income needs. Once a decision is made, they either go on to some form of post-secondary education where any student who has the aptitude for the work is able to afford the education to acquire the knowledge and skills they need for their career choice, or they go directly into



employment, where they both learn new skills on the job and participate in on-going skill development, which may take them into post-secondary education. After post-secondary students graduate, they likewise enter the workforce where they are exposed to skill development through work as well as continuing education and training. Regardless of the point at which an individual's skills are taken to the market place, an effective labor exchange system ensures workers' skills and interests are well-matched with employer needs.

There are many points where this idyllic scenario can fail. Employers tend to only communicate their skill needs for today, or for a short time into the future. They may not be able to predict what kind of workers they will need a few years down the road, much less how *many* workers they'll need with specific skill sets. Labor market predictions can be rendered inaccurate by many unforeseen economic events. Such was the case for ALCOA's Warrick County operations in EGR 11 as Russian aluminum exports tripled between 1991 and 1993 resulting in lower market prices and a negative impact on employment at the Aluminum production facility.

There is also the possibility that career information may be presented poorly or not communicated at all. It was pointed out during a focus group session with Career and Technology Education educators that the best way to attract students into their programs was one-on-one counseling sessions. However, organizational constraints dictated that recruitment efforts focus on the mass assembly presentation as their primary means of outreach. As a result, some students that would benefit from the programs don't enroll.

Even armed with good data about the labor market, students are often lacking information about how their own aptitudes and interests mesh with the market's needs. Some students make good decisions but are unable to afford the education and training they need and want. Others may have good information but human nature and youthful immaturity lead to irrational decisions. In addition, after entering the workforce, too many workers stop their on-going education and too many employers don't actively prepare their workforce for future workplace demands because the skill training is not accessible or timely.

Most young people also rely heavily on their parents for guidance in making career decisions. About seventy-six percent of the regions high school juniors indicated they consulted with their parents about career decisions.² Yet parents rarely have access to quality labor market information. Often parents are predisposed to send their children to a four-year post-secondary academic institution because the Bachelor's degree is perceived as essential for success, independent of the child's aptitudes and abilities.

The system is also complicated by other factors such as: labor market intermediaries may not be able to efficiently match workers and jobs, poor employer practices lead to

² Indiana Guidance Report, Indiana department of Education and the Indiana Commission for Higher Education
http://www.learnmoreindiana.org/@counselors/counselors_hs/indiana_guidance_report/

worker attrition, changing needs and interests of the individual who may go through one or more career changes during their working lives and conflicting signals from the labor market. A good example of such conflicting signals is that the increasing demand for Registered Nurses is in part due to the lack of nursing school faculty to support additional students in the programs. In an efficient labor market, the demand for Registered Nurses would stimulate incentives to produce more nursing school faculty to produce more nurses. However, it was pointed out during a focus group session with nursing school faculty that some faculty members had taken a fifty percent cut in pay after leaving practice in order to teach. This is clearly a disincentive to pursuing the academic credentials required for a nursing school faculty position.

In the industrial world, a *root* cause is "the fundamental cause(s) that, if corrected, will prevent recurrence of an event or adverse condition."³ In the labor market system, there is no single cause or even collection of causes that can be corrected that will guarantee there will be no recurrence of the end result. The causes act simultaneously on each occupational shortage and are not totally controllable; we cannot predict with any certainty the degree to which improvements to any one part of the system will have on reducing the shortage.

While we will never totally eliminate any shortages from appearing or recurring, we can improve the efficiency of each part of the system, and, using techniques such as the strategic skills initiative process, ameliorate the pain of current skill gaps and minimize the size and duration of future ones. The new Regional Workforce Board (RWB 11) is committed to monitoring the performance of this broad system, and making adjustments and corrections as needed to keep all parts of the system functioning as effectively as possible. There is no more important task for an RWB than this.

The table below outlines the symptoms and impact of these inefficiencies, and how they relate to the causes identified for the target occupations through secondary and primary research.

³ <http://www.iprr.org/Reviews/rca.html>

The Impact of System Inefficiencies

System Inefficiency	System Symptoms	Related Causes Found for LPN and RN	Related Causes Found for all Maintenance Occupations	Impact
Labor market information and corresponding career interest/aptitude information are inadequate for decision-making.	<p>Young people are unaware of careers. They may have unrealistic or inaccurate understanding of the actual work.</p> <p>Postsecondary institutions enroll too many students in programs where workforce demand is declining and don't take steps soon enough to develop or enhance programs where demand is growing.</p>	<p>Young people are not aware of the reality of the nursing profession, and may drop out when they reach the clinical stage. They do not know about careers in our secondary or emerging focus (medical imaging, respiratory therapy, tissue and eye bank tech, genetic counselor, tissue process technician).</p> <p>Students have poor image of nursing due to lack of respect for profession shown by media, patients, and health care provider peers.</p> <p>There are insufficient training slots to meet the demand for nurses, which has grown faster than postsecondary schools can act to increase capacity.</p>	<p>Unless young people come from a family where someone has worked in a maintenance field or elsewhere in manufacturing, they tend not to be aware of, or interested in maintenance-related jobs. They are oblivious to emerging occupations such as materials compliance specialist.</p> <p>Enrollment in maintenance programs rises and falls unrelated to the demand; student recruitment strategies not sufficiently linked to demand.</p> <p>Aging workforce able to retire at will makes projecting demand difficult and complicates enrollment estimates.</p> <p>Poor economic times in late 80's, early 90's that caused lay-offs and hiring freezes resulted in shrinkage of pipeline and subsequent gaps when economy improved.</p>	<p>When wrong choices are made, students waste time and money pursuing education they will never use, and lose time that could have been better spent preparing for an in-demand career.</p> <p>Supply swings up and down, but not at the same time or in the same proportion as the demand.</p>

System Inefficiency	System Symptoms	Related Causes Found for LPN and RN	Related Causes Found for all Maintenance Occupations	Impact
Employer skill needs for tomorrow aren't accurately communicated to schools or accurately translated by schools into curriculum.	Learners lack adequate and appropriate math and/or language skills to pass school entrance exams, succeed in postsecondary education, or succeed at work.	Students struggle with math and science requirements.	Students struggle with math requirements.	Attrition from school programs wastes valuable seats in the classroom. Attrition from jobs costs employers productivity and money.
Labor market intermediaries do not efficiently match supply and demand.	Individuals are unemployed for long periods. Employers cannot fill vacancies timely and may resort to "any hire" rather than the "best hire."	Potential workers that live elsewhere are unwilling to relocate to southwestern Indiana.	Potential workers that live elsewhere are unwilling to relocate to southwestern Indiana.	Reduction in personal income and reliance on public supports. Loss of productivity both during vacancy as well as when poor hiring decision is made.
Postsecondary and continuing education and training (lifelong learning) does not occur due to lack of access, lack of resources, or lack of will.	Workers lack the skills needed to take a firm to the next level. Workers' skills become obsolete and they suffer long periods of unemployment while they learn new skills.	Insufficient clinical space. Insufficient faculty; MS/PhD nurses can make more money in clinical practice. Many students, particularly minority, non-traditional students lack funds to enter or stay in nursing program.	Training options aren't consistent with workers' schedules.	Reduced competitiveness of firms, loss of productivity, lower wages, potential closure of firms, and increased unemployment.
Employer practices do not make them "employers of choice."	Low worker satisfaction.	Shift work/mandatory overtime results in burnout. Increased paperwork increases nurse dissatisfaction. Low wages in the region.	Shift work is undesirable. Low wages and benefits in the region compared to elsewhere, particularly in small companies.	Lower productivity due to vacancies and attrition.

The Center on Urban and Metropolitan Policy has stated, “Ultimately, state and local economic development policy makers should consider shifting their emphasis from increasing the **quantity** of certain types of workers, toward embracing **human capital development as a longer-term goal**. Paired with amenity strategies for younger workers and more workplace flexibility for older workers, policies to raise the stock of knowledge in a region can ‘split the difference’ between demand-side and supply-side labor market interventions.”⁴ RWB 11 is prepared to embrace the larger human capital development goal by improving the efficiency and effectiveness of labor market functioning.

Some Causes are More Critical than Others

While the causes act simultaneously on the shortages, some are more critical than others in the short term for quickly reducing the gap. Some are longer term or not as easily addressed, such as the low wage rates in the region compared to other regions in the country.

Let’s look at each cause, secondary cause(s), presumed quantitative contribution of the cause on the shortage, qualitative contribution (sensitivity), and how feasible it is for EGR 11 to affect the cause through the SSI initiative. The last column in the table below contains the **rank** or relative importance of each cause. Ranks were established by averaging considerations from the previous three columns. The Regional Consortium reviewed the analysis and reached final consensus on the assigned ranks. It is inappropriate to establish quantitative estimates for any single cause because of the reasons described previously in this report. Rather, we have used numbers to express quantity, quality, and feasibility as follows:

Quantitative	Qualitative	Feasibility to address
1 = Major	1 = High	1= High feasibility to address
2 = Moderate	2 = Moderate	2= Moderate feasibility to address
3 = Minor	3 = Low	3= Low feasibility to address

⁴ “Labor Supply Pressures and the “Brain Drain;” Signs from the Census 2000 from the Center on Urban and Metropolitan Policy, January, 2004.

Root Cause Rankings - Nurses: LPNs and RNs

Cause	Secondary Causes	Quantitative Assessment	Qualitative Assessment	Feasibility	Final Rank
Career Awareness and Preparation	Inadequate labor market/career education information.	3	3	1	2.3
	Inadequate outreach by employers and postsecondary institutions to K-12 students.	3	2	1	2
	Insufficient math and science preparation.	2	1	2	1.7
Training Accessibility	Insufficient clinical sites	2	1	2	1.7
	Insufficient faculty	1	1	2	1.3
	- too few MS/PhDs	(see lack of funding for training)			
	- Lack of incentives to teach	2	1	2	1.7
	Insufficient funding for training (LPNs, RNs, and teaching MSNs)	2	2	1	1.7
Workforce Retention	Excessive paperwork	3	3	3	3
	Mandatory overtime	2	2	3	2.3
	Undesirable shift work	2	2	3	2.3
	Aging workforce	2	2	3	2.3
	Low pay	2	2	3	2.3

In rank order, then, the most important underlying causes for shortages in nursing are:

1. Insufficient faculty
2. Insufficient funding for training; Insufficient math and science preparation; Insufficient clinical sites; Lack of incentives to teach
3. Inadequate outreach by employers and postsecondary institutions to K-12 students; Inadequate labor market/career education information; Low pay; Aging workforce
4. Mandatory overtime; Undesirable shift work
5. Excessive paperwork

When multiple factors are ranked the same as in #2, the first listed causes is the one that had the greatest feasibility of being affected through the SSI initiative.

Our next step was to prioritize based upon feasibility and thus focus resources that are likely to succeed. It should be noted, however, that during the solution phase, groups that address **any** identified root cause(s) with a clear line-of-sight solution will receive consideration. The following root causes are considered to be the top SSI priority for our solution efforts:

1. **Insufficient faculty.**
2. **Insufficient funding for training; Insufficient math and science preparation; Insufficient clinical sites; Lack of incentives to teach.**
3. **Inadequate outreach by employers and postsecondary institutions to K-12 students; Inadequate labor market/career education information.**

Root Cause Rankings - Maintenance Occupations

Cause	Secondary Causes	Quantitative Assessment	Qualitative Assessment	Feasibility	Final Rank
Career Awareness and Preparation	Inadequate labor market/career education information.	3	3	1	2.3
	Inadequate outreach by employers and postsecondary institutions to K-12 students.	3	2	1	2
	Insufficient math and preparation.	2	1	2	1.7
Training Accessibility	Training options not consistent with workers' schedules	2	2	1	1.7
Workforce Retention	Region not desirable	3	3	3	3
	Undesirable shift work	2	2	3	2.3
	Aging workforce	2	2	3	2.3
	Low pay	1	1	3	1.7

In rank order, then, the most important underlying causes for shortages in maintenance occupations are:

1. Training options not consistent with workers' schedules.
2. Insufficient math preparation.
3. Inadequate outreach by employers and postsecondary institutions to K-12 students.
4. Inadequate labor market/career education information; Aging workforce; Low pay.
5. Undesirable shift work.
6. Region not desirable.

Leaving out those that were deemed least feasible results in the following priorities for the focus of our solution efforts:

- 1. Training options not consistent with workers' schedules.**
- 2. Insufficient math preparation.**
- 3. Inadequate outreach by employers and postsecondary institutions to K-12 students.**
- 4. Inadequate labor market/career education information.**

Additional discussion regarding root causes, the results of secondary research, and quotes from focus group participants are contained in the Research section following the executive summary.

Methodology

Use of Recommended Methodology and Web-Based Training

Participants in the web-based training provided by DWD included members of the SSI Implementation Team:

- Jim Julian, Sector Strategy Coordinator
- Charles Roche, Executive Director, Shawnee Trace Workforce Investment Board
- Jerry Yezbick, Executive Director, Southwest Workforce Investment Board
- Jeff Amos, Policy/Planning Director, Southwest Workforce Investment Board
- Sheila Hess, Director of Administration, Vincennes University

Along with the Guidebook, the web-based training provided direction to the research. There was no alternative methodology used.

Regional Focus Group Activity

Focus groups were the primary method for gathering root cause information along with secondary data research. This approach allowed probing into thoughts behind individual responses. When focus group sessions were not possible individual interviews were conducted to obtain the greatest level of input from regional stakeholders. Surveys were not utilized as they do not produce sufficient result with open-ended questions nor do they provide the opportunity to follow-up on a response. The focus group activity included:

Nursing Focus Group / Interview Participants: LPNs and RNs

9 Nursing Sessions totaling 78 Participants

- ◆ 4 Nursing Students, University of Southern Indiana, Evansville; 1/24/2006
- ◆ 13 Nursing Faculty, University of Southern Indiana, Evansville; 1/25/2006
- ◆ 14 Nursing Students, Vincennes University, Vincennes; 1/26/2006
- ◆ 7 Nursing Faculty, Vincennes University, Vincennes; 1/26/2006
- ◆ 7 Nursing Faculty and Students, IVY Tech Community College, Evansville; 1/27/2006
- ◆ 12 Practicing Nurses, Welborn Clinic, Evansville; 1/31/2006
- ◆ 11 Practicing Nurses, Deaconess Hospital, Evansville; 2/3/2006
- ◆ 9 Nursing Faculty and Students, University of Evansville, Evansville; 2/6/2006
- ◆ 1 Hospital Administration, Perry County Memorial Hospital, Tell City; 2/16/2006

Maintenance Occupations

11 Maintenance Sessions totaling 82 participants

- ◆ 5 Industrial Maintenance Faculty, Ivy Tech Community College, Evansville; 1/23/2006
- ◆ 3 Industrial Maintenance Students and Faculty, Ivy Tech Community College, Evansville; 1/23/2006
- ◆ 6 Industrial Maintenance Students, Ivy Tech Community College, Evansville; 1/25/2006
- ◆ 4 Maintenance workers, Essex Wire, Vincennes; 1/26/2006
- ◆ 34 Industrial Maintenance Students and Faculty, Vincennes University; 1/26/2006

- ◆ 7 Maintenance workers, Toyota Motor Manufacturing Indiana, Princeton; 2/1/2006
- ◆ 7 Maintenance workers, Thyssenkrupp Waupaca, Perry County; 2/1/2006
- ◆ 6 Apprenticeship and Maintenance workers, Alcoa, Warrick County; 2/2/2006
- ◆ 4 Maintenance workers, Black Beauty Coal, Vincennes; 2/3/2006
- ◆ 1 Member of Management, AK Steel, Rockport; 2/8/2006
- ◆ 5 Maintenance worker, Jasper Engines, Jasper; 2/28/2006

3 Additional Focus Groups totaling 19 participants

- ◆ 13 One-Stop Job Club members and staff, Evansville; 2/3/06
- ◆ 5 Career and Technology Education Staff, Evansville Vanderburgh School Corporation, Evansville; 2/7/06.
- ◆ 1 Career and Technology Education Administration, Jasper; 2/21/06

Focus group questions for employers were built around:

- Industry issues: image of the industry, recruitment strategies, how recruitment strategies have changed over time, how they assess/screen, how competitive they feel their wages/benefits are, turnover rates, perception of causes for turnover, retention strategies; changes in retention strategies over time, working conditions, supervisory issues; exit interview results, HR resource gaps, drug/alcohol;
- Pipeline issues: image of the industry, curriculum, foundation skills, career advice, parental influence;
- Regional issues: perception of workers moving into and out of region; how region attracts/ retains skilled workforce.

Focus group questions for incumbent workers were designed to elicit information about:

- Industry issues: image of the industry and their occupation, how competitive they feel their wages/benefits are, perception of causes for turnover, working conditions, supervisory issues;
- Occupational issues: what led them to their current career choice; what they like/don't like about their occupation; what opportunities they feel they have for advancement; willingness to engage in education and training; where they obtained the skills they have; skill gaps they think they had; skill gaps they are seeing in other new hires; whether they would advise others to enter this occupation; whether they would advise their own children to enter occupation; what they perceive as causes for shortages;

- Regional issues: what attracts them to this region; what might cause them to leave.

The conversations with postsecondary students centered on:

- Where they received career advice;
- Perceptions of manufacturing or health care;
- Their understanding, awareness of the occupations;
- Expectations for wages/benefits, career advancement;
- How well they feel their K-12 experience prepared them for postsecondary education;
- Postsecondary education issues: cost, ease of access, duration of program, hours offered, satisfaction with skill building, barriers to staying in program;
- Job hunting strategies.

The discussion with one-stop job club members and staff were built around:

- How well they understood the shortage occupations;
- How they communicated skill shortages to job seekers;
- What barriers they encountered in getting into training for these occupations;
- What they heard from job seekers about interest / disinterest in manufacturing and health care in general and these kinds of careers in particular.

Participation of Regional Consortium

Consortium Participation

The Regional Consortium members provided access to their facilities, faculty, students, and incumbent workers employed in the targeted occupations. Without their assistance and participation in some of the groups, the scope of primary research would have been considerably smaller.

The Implementation Team developed a first draft that organized and analyzed the data from the root cause assessment research. The Lead Team, which functions as the “executive committee” of the Consortium, then reviewed the findings and conclusions prior to taking the draft report to the Research Validation Team and the full Consortium. The Research Validation Team consisted of Dr. Mohammed Khayum, Dean of the College of Business, University of Southern Indiana and Dr. Darrin Sorrels, Dean of the School of Business, Oakland City University. All consortium members were presented with the draft Root Causes report on February 24, 2006. Two Consortium meetings were convened on March 1, 2006; Evansville and Jasper. During the meetings, research findings were presented followed by a discussion to validate the

findings and conclusions, and ensure consensus on root causes, sensitivities, impacts, and rankings. The root cause assessment findings were consistent with Consortium experiences and the Consortium approved of the report as presented.

Regional Coverage

The identification and analysis of root causes was conducted on a regional basis and was not the result of separate self-interested activities by individual WIBs and/or their component jurisdictions. The Implementation Team consisted of staff from both the Shawnee Trace and Southwest WIBs. Members of both the Shawnee Trace and Southwest WIBs were on the Lead Team and the Consortium, which ensures that the project is truly regional, and not just in the interests of one board or one part of the region. Other Consortium members represent industries, educational institutions, economic development entities, and governmental entities from throughout the entire nine- county area.

As can be seen from the list of focus group activities, every effort was made to include focus group participants from the two major population, industry, and education centers in the region, Vincennes (Knox County) and Evansville (Vanderburgh County). Outlying counties were included through focus groups in Dubois, Gibson, Spencer, Warrick, and Perry Counties.

Industry Partner Involvement

Industry partners who participated in the primary research included Welborn Clinic and Deaconess Hospital in Evansville, and Perry County Memorial Hospital in Tell City for health care; and Essex Wire, Toyota Motor Manufacturing, Thyssenkrupp Waupaca, Alcoa, Black Beauty Coal, Jasper Engines and Transmissions and AK Steel for industrial maintenance.

Regional Workforce Board Support

The newly established Regional Workforce Board for Region 11 was introduced to the Strategic Skills Initiative at their meeting on January 30. The Implementation Team made a presentation to familiarize the members with the targeted industries and occupations, the Phase I report, and planned actions and timeframes for the Root Causes and Regional Solutions phases. Some members of the SSI Consortium are also members of RWB 11. The Regional Workforce Board will continue to be involved and play a role through the remainder of the initiative. They are aware of, and committed to taking responsibility for overseeing implementation of solutions to the skill shortages in our area.

The Future – A New Root Cause on the Horizon

The March, 2006 edition of National Geographic addressed two of the target industries in Region 11: coal mining and utilities. “Next time you turn up the AC or pop in a DVD, spare a thought for places like Gibson [County, Indiana] and for the grimy fuel it devours at the rate of three 100-car trainloads a day.”⁵ Engineers are exploring technologies to change how we turn coal into energy. The article notes that 100 miles up the Wabash River from Gibson County, a new style of power plant is producing much cleaner power through coal gasification. The few coal gasification plants in existence are still considered experimental; they are less reliable and the technology costs 20% more. However, Gibson Cinergy CEO James Rogers claims that he will build one of the first commercial-scale gasification power plants.

Although new technology was not identified as a root cause at this point in time, changes in technology are likely to be root causes for future shortages. Both targeted occupations, industrial maintenance and nursing, indicated during focus group sessions the need for life-long learning to keep up with changes in technology. While Region 11 may be at the forefront of this new technology because of Cinergy’s resolve to lead the way, there are likely to be other new technologies that we cannot yet predict that will impact other industries, particularly advanced manufacturing and health care. Through the SSI process, Region 11 will continue to watch both the size and type of shortages as well as their causes. We will not assume that the root causes of today will be the same root causes tomorrow, and workforce development resources and efforts will be directed accordingly.

⁵ “The Coal Paradox,” National Geographic; March, 2006

Research

While specific occupational shortages may change from time to time depending on current products, business cycles, demographic changes, school graduation timeframes and economic flux, the reasons for shortages are fairly universal. Research in Region 11 confirms the large body of literature on the causes for shortages in other parts of the state and nation.

Nursing Shortage: The Whole World Shares our Pain

Training Accessibility is a Major Factor

Countries around the world are facing critical nursing shortages. From North America to Africa and Europe, communities are challenged with growing health care needs and diminishing numbers of nurses. No region has a surplus that can be tapped to fill the shortages in some labor markets.

Many factors are contributing to the current shortage. They include:

- Steep population growth resulting in a growing need for health care services,
- A diminishing pipeline of new students in nursing, and
- An aging nursing workforce.
- In addition, with improved technology and managed-care issues, only the sickest patients require hospital stays and intense treatment. Thus, skilled and specialized nurses are in great demand.⁶

These issues are occurring just as the majority of nurses are retiring and job opportunities within health care are expanding. The result: hospitals and other institutions need more nurses, especially those who deliver specialized care.

The National League for Nursing (NLN) conducted research into the causes for the nursing shortage in 2005. They found: “today's nursing shortage is very real and very different from any experienced in the past. ‘The current shortage is evidenced by an **aging workforce** and an **inadequate number of people entering the profession**. Schools of nursing are suffering from a continuing and growing shortage of faculty, which prevents these institutions from admitting many qualified students who are applying to their programs.’ A recent NLN survey of nursing programs at all levels shows that an estimated 125,000 qualified applicants were turned away from nursing programs for the academic year 2003-2004 because of the **faculty shortage**.”⁷ [Emphasis added].

⁶ http://www.nursingsociety.org/media/facts_nursingshortage.html

⁷ “NLN Advocates for Substantial Increase in Title VIII Funding;” *Nursing Education Policy*, April 28, 2005

Nursing faculty in most states must minimally have a master's degree or be working toward its completion. But there are barriers to obtaining a master's.

“Attracting new nurses to pursue careers as nurse educators is becoming increasingly difficult because of barriers which limit access to advanced nursing degrees in education. The burden of financing master's degrees in nursing while maintaining living expenses and benefits is particularly challenging. Candidates targeted for advanced educational degrees in nursing typically represent mid-career professionals; however, tuition assistance for full or part-time study available to such candidates is limited and extremely difficult to obtain. The current system of preparing nurse educators does not provide the flexibility needed to respond to changing enrollment demands and/or cater to the culture and lifestyle of potential faculty candidates.”

Addressing Pennsylvania's Nursing Education System Capacity; Pennsylvania Workforce Investment Board, October 20, 2004

In Florida, where the nursing shortage is particularly acute, the state legislature's Office of Program Policy Analysis and Government Accountability studied the issue and determined that there was no lack of people interested in going into the nursing field. The major issue was insufficient room in nursing schools, and the major cause behind that lack of room was **“not enough people willing to teach – those qualified to teach nursing can earn a much higher salary working as clinicians.** The Legislature's auditing arm recently surveyed nurses about what would make them consider going into teaching. **‘Across the board, the main thing was getting salary and benefits increased.’”**⁸ [Emphasis added].

Further evidence of the acute faculty shortage situation can be seen in actions being taken by other states.

- In New York, several bills have been introduced to create incentive programs for nursing faculty enrolled in higher education. The programs would provide monetary awards for nursing educators who agree to teach in New York nursing schools for a contracted amount of time.
- In Vermont, a bill introduced in the House asked for the establishment of an education loan forgiveness program for expenses related to advanced degrees of nurses serving on the faculty of selected state colleges and universities.⁹

⁸ <http://www.ena.org/government/washington/2005/April2005.pdf>

⁹ Ibid.

- In Illinois, Governor Blagojevich's just released a proposal to attract and retain nursing school teachers, "who are in short supply largely because these **advanced-degree nurses can make more money outside the classroom**. Too few teachers are a large reason why more than 1,100 qualified applicants were turned away from Illinois nursing programs." The Governor has requested \$1.5 million for grants to schools to add teachers. An additional \$150,000 would be set aside to supplement the salaries of 15 nursing educators.¹⁰
- Arizona, Texas, Maryland, and Virginia provide incentives for nursing faculty. Texas allocated an additional \$1.5m to pay faculty for course overload.¹¹

Our local research found that lack of faculty, lack of incentives to teach, and insufficient clinical space were all significant root causes, which are totally supported by secondary research cited above. A survey of postsecondary institutions conducted by Florida's Office of Program Policy Analysis and Government Accountability found the following:

Barriers to Increasing Nursing Program Capacity¹²

	Community Colleges (n=24)	State Universities (n=10)	Independent Colleges and Universities (n=7)	Total (n=41)
Shortage of Clinical Space	12 (50%)	3 (30%)	3 (43%)	18 (44%)
Shortage of Qualified Faculty	16 (67%)	3 (30%)	4 (57%)	23 (56%)
Faculty Salary	8 (33%)	8 (80%)	2 (29%)	18 (44%)
Shortage of Physical Space	5 (21%)	3 (30%)	4 (57%)	12 (29%)

What Could Entice Nurses to Become Faculty¹³

	Community Colleges (n=24)	State Universities (n=10)	Independent Colleges and Universities (n=7)	Total (n=41)
Increased salary and benefits for faculty	19 (79%)	9 (90%)	6 (86%)	34 (83%)
Increase financial incentives for students	11 (46%)	5 (50%)	2 (29%)	18 (44%)
Flexible scheduling	6 (25%)	3 (30%)		9 (22%)

¹⁰ "Gov Aims to Give Nursing a Shot in the Arm;" Lori Rackl, Chicago Sun-Times, February 7, 2006

¹¹ "Nursing Education;" Jane Fletcher, presentation to Florida Office of Program Policy Analysis and Governmental Accountability

¹² Ibid.

¹³ Ibid.

Nursing faculty in focus groups in Region 11 told us that going from clinical work to teaching involved taking about a 50% cut in pay.

- “It is difficult to recruit into Nursing Faculty because you are asking for more academic degrees and the salaries are not good. The people who are here teach because they want to teach. Not because of they are making a decent amount, we could make more in practice. That has to be part of the concern for the nursing shortage. Soon we are not going to have people teaching. The average age of faculty is 52 years old.”
- “I think it is what we socially value. I think we value business in our society, we want business innovation, so when we look to hire business faculty prepared at the Ph.D. level we are willing to pay a lot of money for business faculty and engineering faculty.”
- “It is because it is what we do in nursing, we try to fix it. What we should do is just say enough is enough. Instead we try to fix it and make it better. Well, when we make it better, we just keep the status quo.”
- “The retiring faculty are not being replaced. Part of it is salary and part of it is because of the academic rigor; you know teachers have to have a Ph.D. and you can get more salary doing something else.”
- “I do think, when you look at people who go, like a physician, or people who go and spend a lot of years in school and they get a higher salary and they get higher social standing. Then in nursing if you have a doctorate, that is not considered a big deal to people outside of nursing and you asked ‘why didn’t you become a real doctor?’”
- “When you are trying to get a nursing doctorate, your salary is not going to be good enough [to repay large student loans], you know. It doesn’t even make that much difference if you have a doctorate or not.”

Working Conditions Contribute to Shortages

Secondary research also supported the findings from our primary research that working conditions such as mandatory overtime contribute to the shortage by driving nurses away from the profession.

“The American Nursing Association (ANA) maintains that the reasons for the current staffing shortages and the answers to the impending shortage are multifaceted. **Of particular concern is the negative impact today's working environment is having on the retention of RNs** as well as the ability of the profession to recruit students...Large numbers of RNs are leaving the bedside.

“There is not a current shortfall in the number of nurses, per se. Rather, there is a shortage of positions that these RNs find attractive.” O’Sullivan [president of the Illinois Nursing Association] went on to explain, “Nurses are, understandably, reluctant to accept positions in which they will face inappropriate staffing, be confronted by mandatory overtime, inappropriately rushed through patient care activities and face retaliation if they report unsafe practices.”

In her written testimony, O'Sullivan provided the committee with an ANA supported integrated state and federal legislative campaign that addresses the current and impending nursing shortage. Key federal initiatives addressed in the comments included elimination of mandatory overtime, models for adequate staffing, support for nurse education and whistleblower protections... "The U.S. health care industry has failed to maintain a work environment that is conducive to safe, quality nursing practice and that retains experienced American nurses in patient care."¹⁴

Excessive paperwork (administrative tasks), lack of recognition, and long hours have also been cited by other sources.

"To the extent nurses have been visible in the recent news, the subject has mainly been the shortage of nurses and nursing faculty. Nursing advocates attribute the decline to a variety of factors, including **long hours, pay that hasn't always remained competitive, administrative tasks** required by managed-care insurers that take time away from patients and which nurses say frustrates them no end, and nurse-to-patient ratios that can compromise patient health."¹⁵

Nurses in Region 11 focus groups told us:

- "There is so much teaching, discharge planning and admitting that you have to do that on a well staffed day you have all these responsibilities and it is still not enough staffing. I feel we are needing more and more nurses because there are so many things we have to do that are not nursing and not in the nursing book."
- "If you have tomorrow off, as a staff nurse, you wonder if you are really going to be able to be off tomorrow or if you will be called because they need you to come to work; then if you don't [go into work] you feel bad because you know your coworkers are probably working short. So you are trying to make these balances with life outside the hospital but feel a commitment to your coworkers to not leave them drowning."
- "Nobody ever knows when they are going to get off. When you come to work in the morning you don't know whether you will work 8, 12, or 15 hours."
- "I worked a floor for ten years but had to leave because I would go home every day wondering what I had forgotten or who I had neglected."
- "JAHCO [Joint Commission on Accreditation of Healthcare Organizations] took the fun out of being a nurse."
- "I worked on the Cardiac floor 13 years ago. It was scary. I was an experienced Cardiac Nurse so I knew what I was doing but the demand, it is scary. You have patients coming and going you keep patients one day for open heart [surgery], you

¹⁴ "ANA Addresses the Cause for and Solutions to the Nursing Shortage at Senate Committee Hearing;" ANA Press Release; June 27, 2001

¹⁵ "Nursing Shortage: It's Also in Press and Other Media;" *Sheila Gibbon, Women's e-News*; posted 03/30/05

have 5 or 6 people, you can not take care of them the way you should. That was not rewarding, in fact I felt my [nursing] license was on the line everyday I went in. That was why I left. I took a big cut in pay. It wasn't about the money it was about the care. I was scared to death I was going to have something that would cost me my license. You did not have enough time to take care of the patients.

- “The straw that really broke the camels back for me - they called two nurses, me and another nurse to the nurses’ station and said we are going to draw straws. We have another patient coming up to the floor. I could not believe it. That is how they decided who was going to take the next patient. They were going to draw straws. They did not look at the acuity, they did not care what you had going on. I told them, fine, go ahead, but I am not taking another patient. I knew I could not handle it and turned in my resignation the next day.”

The first SSI report for Region 11 illustrated how wages for RNs and LPNs are simply not competitive here compared to other parts of Indiana, where the cost of living is not so different. When wages for nurses are not competitive across the board as a profession, and wages are even lower in Region 11, there is little wonder that a shortage persists.

2004 Wages for Registered Nurses		
	Average Hourly Wage	Average Annual Wage
National	\$26.06	\$54,210
Elkhart	\$25.97	\$54,030
Indianapolis	\$24.24	\$50,420
Indiana	\$22.55	\$46,900
Kokomo	\$22.46	\$46,720
Fort Wayne	\$22.02	\$45,790
South Bend	\$21.61	\$44,950
Terre Haute	\$21.14	\$43,970
Gary	\$21.12	\$43,930
Lafayette	\$20.80	\$43,250
Evansville	\$20.25	\$42,120
Muncie	\$20.02	\$41,650
2004 Wages for Licensed Practical Nurses		
	Average Hourly Wage	Average Annual Wage
Indianapolis	\$17.62	\$36,640
Lafayette	\$17.01	\$35,390
National	\$16.75	\$34,840
South Bend	\$16.38	\$34,070

Indiana	\$16.25	\$33,800
Gary	\$16.07	\$33,420
Fort Wayne	\$15.97	\$33,210
Bloomington	\$15.84	\$32,950
Kokomo	\$15.47	\$32,170
Evansville	\$15.46	\$32,150
Elkhart	\$15.34	\$31,910
Muncie	\$14.83	\$30,850
Terre Haute	\$14.74	\$30,660

Career Awareness Warped by Media Images; Career Prep Falling Short

Everyone knows that nursing careers exist. You cannot say that students need career awareness to introduce them to this occupation called “nurse.” However, they may need help understanding the *reality* of the profession compared to the image of nursing. The media does not accurately portray nurses. Region 11 nursing faculty tell us that students often come to them who later drop out (thus wasting a seat) because nursing didn’t turn out to be what they thought it would be. The Region 11 faculty were not alone in citing the media as a root cause.

“According to nursing advocates, the image of nursing continues to suffer from the long-held stereotype that it's a lesser calling than becoming a physician. That in part comes from **articles, news broadcasts and entertainment programs about health care** that emphasize the importance of physicians in the delivery of health care while understating--and even distorting--the role of nurses in maintaining and restoring patient health.

“Nursing advocates note, for instance, that many health messages, including advertisements, tell consumers to “consult your doctor.” Nurses would rather hear “contact your health care provider.” **In the real world**, they say, many patients are likely to see a nurse practitioner for a complaint before, or instead of, a physician. Recognizing this would be a three-in-one. It would elevate the status of nursing, clarify nurses' roles and reassure consumers about nurses' capabilities...Popular TV shows, such as ‘ER,’ about the world of an emergency room, have been a particular bane for nursing...Summers and members of her organization [Center for Nursing Advocacy] have called and written to the show's producers and writers to protest scripts. They object, for instance, to a line scripted for a stroke-patient character. **‘She's the nurse, maybe she doesn't know,’** the patient says, in reference to her knowledge of his condition. In another episode, a nurse offers a suggestion to a doctor treating a patient in acute distress. He cuts her off: “I fly the plane,” he says. “You serve the coffee.” (This nurse character later goes to medical school.)...In an episode of ‘Scrubs,’ another popular TV drama, a surgeon character comments that **‘any idiot can be a nurse’**...Summers says putdowns of nurses by TV characters are damaging because

television viewers take seriously the information conveyed by these programs. A 2000 survey by the Centers for Disease Control and Prevention found that 52 percent of viewers trusted prime-time TV shows to be accurate. More than a quarter of this survey's respondents said such programs were among their top-three sources for health information.¹⁶

“‘ER,’ the leading hospital drama of the last decade, presents nurses as skilled handmaidens to the dominant physicians, who provide all significant care. In recent films, Gordon finds nurse characters tending toward ‘sexpots,’ sadists, or dimwits. Examples include the archetypal Nurse Ratched of ‘One Flew Over the Cuckoo's Nest,’ the ‘kind but dumb’ image of ‘Nurse Betty,’ and what Gordon accurately terms the ‘dress for success’ feminism of movies like ‘Living Out Loud,’ in which--as on ‘ER’--nurses achieve by moving up to medicine.”¹⁷

“Most people would probably agree that a new image is long overdue. **Future nurses tell us that people need to be able to distinguish nurses from other healthcare providers.** They say that image is about much more than just clothes — it’s about confidence, respect, caring and having a voice at the table.”¹⁸

Focus group participants in Region 11 echoed the reports from the national media.

- Regarding switching from Pre-med to nursing, a nursing student said, “In the opinion of others I was ‘lowering my standards to choose to become a Nurse’.”
- “When I told them that I was going into nursing I might as well have said that I was going to flip burgers at McDonalds”

Part of career awareness is understanding the basic skills needed for the work. Career preparation has been inadequate, particularly in the areas of math and science. Students may believe that nursing is just about being caring and nurturing, but strong math and science skills are needed for education and work on-the-job. Medication administration represents a major client safety issue. It is essential that the nurse has knowledge of mathematical concepts and uses these in preparation of medications.¹⁹

“You will have to be able to pass algebra, and basic chemistry, biology, anatomy and physiology, and microbiology to become an RN. The LPN route is not quite as intense, but the major principals of all of these subjects will definitely be incorporated into the curriculum.”²⁰

¹⁶ Ibid.

¹⁷ “*Nursing Against the Odds: How Health Care Cost-Cutting, Media Stereotypes, and Medical Hubris Undermine Nursing and Patient Care*, Suzanne Gordon, Cornell University Press, 2005.

¹⁸ “The Importance of Image”, Deborah Tamlyn; (April 2005).. *Canadian Nurse*, 101 (4), p. 26.

¹⁹ University of Tennessee at Chattanooga School of Nursing Undergraduate Handbook.

²⁰ <http://nursing.about.com/od/education/f/badatmathscienc.htm>

“Reports indicate that 50 percent of all nursing school attrition is due to academic failure. Therefore, efforts need to be directed at understanding and implementing the kinds of support services required to prevent such high academic failure rates, an **emphasis on improving reading, math, and science skills** and to promoting better learning and test taking skills so that more individuals succeed in nursing’s rigorous course of study.”

Addressing Pennsylvania’s Nursing Education System Capacity;
Pennsylvania Workforce Investment Board, October 20, 2004

Focus group participants in Region 11 voiced concerns consistent with the national findings. Faculty indicated that math and science expectation were the most difficult for the students.

And math and science are not all. A faculty member added, “ISTEP has been a step backwards in terms of student preparation. They [students] can’t think, they [students] can’t reason. I have seen no difference, in fact, it [preparation for college] has been going down every year.”

A nursing student noted, “I just was not prepared in high school. I had no study habits and most classes were memory based. Now my nursing class wants me to apply what I learned and I still have not figured out how to do that.”

Manufacturing Shares Some Root Causes with Health Care

Career Awareness and Career Prep Are Issues

Career awareness is also an issue for maintenance occupations in manufacturing. Far fewer students are familiar with maintenance than with nursing, and even those who have heard of it may not clearly understand what the job is about until they get there.

“Effective plant maintenance is required for any productivity initiative to succeed. Unfortunately, **maintenance is often a misunderstood discipline; and the maintenance worker is just as often misunderstood.** Maintenance is commonly described in terms of preserving or sustaining equipment in proper condition, while repair is viewed as an action necessary to restore equipment to sound condition after damage. Herein lies the problem with many manufacturing facilities. The emphasis for maintenance should not be on repair, but on equipment maintenance. Today's skilled maintenance worker is a hidden treasure because the maintenance skills required for reliable plant equipment are usually not found in the average citizen. Plants are searching for skilled workers to fill the knowledge and skill voids in their maintenance staff.”

“Replacing Technically Skilled Workers: Challenges and Suggestions;”
Cheryl E. P. Evanciew & Steven V. Wither,
Clemson University; *Journal of Industrial Teacher Education*, Spring 2004

Manufacturing in general, and maintenance jobs in particular have a negative image in our society: “We have a vacuum created by people leaving, but we can’t get the future generation to pursue a career in maintenance. **When people think of this field, they see Bubba and Skeeter. It’s not a positive image.**”²¹ A maintenance worker in a Region 11 Focus Group said, “When people ask me what I do, I never say I am a maintenance mechanic, I am a maintenance technician. That is the image, as soon as you say mechanic they think of you with grease up to your elbows.”

A maintenance worker named Joe Leonard has fashioned himself as maintenance evangelist in an attempt to change the image of the occupation. He has released two songs aimed to attract interest, including one titled “Find Me a Maintenance Woman,” which plays on stereotypical views that often keep women out of the industry. Women

²¹ “The Maintenance Evangelist,” Sidney Cruze; date not provided

only represent about 5 percent of the maintenance workforce. “Most women don’t see themselves in this field, but often they perform better than men,” Leonard says.²²

Manufacturing is plagued by a poor image overall. The National Association of Manufacturers (NAM) noted in its report “Keeping America Competitive” that the “sector’s image was found to be heavily loaded with negative connotations and universally tied to a stereotype of the ‘assembly line.’ As well, it was perceived to be a state of decline.” NAM further pointed out that the education system exacerbates the negative image because of the emphasis on four-year university degrees. Few people link manufacturing careers to high technology or innovation.

“You asked how to get young people interested in maintenance positions. Have you ever seen movies ... you ever see all those people working in those factories? It’s dimly lit and water is dripping, it is kind of depressing. That is not what factories are like, that is not what skilled trades are like. Now people work with oscilloscopes and on machines. I don’t know that the younger people actually know ... if they think that is what skilled trades and factory work are like I wouldn’t want to be there either, that is a false projection.”

Maintenance worker in a Region 11 Focus Group

Because manufacturing is poorly perceived, the best and brightest shy away from the industry. Employers are often faced with adequate *numbers* of manufacturing workers available, but insufficient *qualified* workers.

- 60% of manufacturers typically reject between 50-100% of applicants as unqualified.
- Half to two-thirds say the incumbent non-exempt workers possess **serious deficiencies in math**, oral and written communications, and basic employability skills such as timeliness.
- 20% of manufacturers say that ineffective skills prevent them from expanding, and one-third say such deficiencies make them unable to improve productivity.²³

The Education and Training Administration’s Business Relations Group published an Advanced Manufacturing Industry Report, identifying the industry’s challenges.²⁴ The report identified three challenge areas for the industry:

- ◆ Improving the **public image** of manufacturing;

²² Ibid.

²³ “The Skills Gap: The Shortage of Qualified Workers;” Center for Workforce Success; National Association of Manufacturers.

²⁴ (www.doleta.gov/BRG/pdf/Advanced%20Manufacturing%20Report%2011.1.05.pdf).

- ◆ Ensuring individuals have the necessary **foundational and employability skills** for jobs in manufacturing; and
- ◆ Designing and conducting “**21st Century**” **recruiting programs** to draw individuals into manufacturing careers or manufacturing training.

A study done in Cleveland found that there is a bias among career counselors to promote four-year degrees, and that nearly 70% of high school students were planning to go to a four-year college, but only a fraction of them can be expected to graduate with a degree. “More than 40 percent of those surveyed attribute a sense of embarrassment to vocational education training programs, and 45% said pursuing technical training might limit their career options.”²⁵ A former Region 11 Guidance Counselor mentioned during a discussion about career awareness, that part of the problem stemmed from Guidance Counselors getting their continuing education credits from programs held at Colleges and Universities. These programs reinforce their current approach to career counseling. It was also mentioned that Guidance Counselors had limited exposure to the modern manufacturing workplace and career options.

Focus group participants in Region 11 agreed with these findings:

- “The counselors typically, with a student that does not plan on going to college, the counselor doesn’t worry about **algebra or geometry** and that is a big mistake. They don’t worry about the craft [skilled trades] person. When they should be steering that student to something like that. We have meetings with people over the years and tell them, but that message still seems like it does not resonate to the people at the freshman level that they are counseling these people and making sure they get [algebra and geometry]. If they decide not to go to college they still have the algebra and geometry in their background...it’s a hard message to sell because high schools are basically selling that you need to go to college, and every parent wants their child to go to college.”
- “Most of my students aren’t motivated by anything academic. They are motivated by the hands-on, the finished product, taking something apart and fixing it and seeing it work. What I have noticed is that once they become successful in that, then the other things that they know they need they’ll start to try harder at. But when you tell them they need math for math’s sake or English for English’s sake, my boys will shut down in a heart beat. But I relate to that because I did. It wasn’t until I got into vocational programs that I actually motivated myself.”

²⁵ “Believe it: Manufacturing Remains Alive;” author and date unavailable

Training is Available but not Always Accessible

Access to training is vital for incumbent workers, not just for young students contemplating a career.

“Far too many [maintenance workers] are neither products of formal apprenticeship-type training programs nor graduates of vocational-technical programs for their line of work. Today, maintenance education—including the transfer of crucial trade and craft skills and knowledge—continues to be the least defined of all industrial activities. The bottom line here? **We have to find a way to make our equipment-related training fast, focused and sustainable.** If we are to improve our equipment performance and reliability, become more competitive and address the skills shortages. Traditional approaches to maintenance and operations training under which we've been working may no longer appropriate.”²⁶

During focus groups sessions with post-secondary institutions and industry partners in Region 11, it became apparent that access to training was limited by three factors: course availability, employers valuing continued employee training, and employee desire or ability to go to the training. The first condition requires there be a provider in the region. Region 11 is well suited, as both Ivy Tech Community College and Vincennes University have programs focused on industrial worker training. Both institutions offer area businesses on-site as well as classroom-based training options. While both institutions indicated that they offered classes for non-traditional students/incumbent workers in the evening or in off campus locations, discussions with industry partners revealed that often the desired training was offered during the normal eight to four shift. The timing of the class requires employers to make special arrangements for the employees to be away from work and on the clock to attend. It was also noted that even though the employer would pay for the course, often the employee did not take advantage of the opportunity. The employees indicated that their family situation made it difficult to be away from the family for additional work related activities. Therefore in order for training to occur, all three groups must value the training and work together to insure that equal consideration is given to respective resource and time constraints.

“Tuition reimbursement programs are helping us get the skills we need back into the workplace. However, not enough employees are taking advantage of these programs to make a large enough dent in our skills shortage. One reason: pursuing a degree under a tuition reimbursement program requires a huge commitment of time and energy—particularly difficult for those with families. We need to interest more employees in using this important resource.”²⁷

²⁶ “Recommendations For Survival: Skills Training Approaches For Fast & Sustainable Equipment Reliability;” Robert M. Williamson, Strategic Work Systems, Inc; *Maintenance Technology*’ June, 2005

²⁷ “Tackling the Skills Shortage;” Gary Johnson, National Technology Transfer; June, 2004; <http://www.mt-online.com/articles/0603nttskills.cfm>

Many of the incumbent workers in our focus group came to maintenance after having been in manufacturing in some other capacity. As one worker said, “After high school I went to college, but dropped out and started working. After I got married and had a kid, I needed to find work with better pay and benefits. So I got a job in production. I like working with my hands and saw the freedom of being in maintenance, not tied to one place.”

With existing workers being a prime source of supply, being able to address their training needs with “just in time” training that is readily accessible would have value for employers to be able to “grow their own.”

Selected quotes from Region 11 focus group sessions with workers in industrial maintenance occupations regarding training accessibility:

- “I have not been able to take the motor drive course because it’s a day and night course, it fluctuates back and forth”
- “The problem is that most of the courses are offered during the day, so if you work an eight to four shift, either the employer has to make arrangements for you to be off and pay you while you are gone, so you don’t miss out on the pay or you miss out. There really isn’t much offered at night or on the weekend.”
- “Part of the problem, I believe, like with training night courses, you have a family life you have got your kids, one kid’s got this and the other has something else. The time frame is just not good. It’s not that I wouldn’t like to, it’s just that I can’t fit it in. The younger you are it is probably easier to do that, but the older you get and then the older people are set in their ways.”
- “Academic criteria for instructors have increased making it difficult to teach skilled trades. I once had an instructor, a while back, that was a Psychology major teaching pipe fitting. He was a great instructor. He would try to learn it, but he had absolutely no idea about pipefitting, never done it. But he was of the opinion he could take the book, study it and be an instructor of anything. He did not know how to hold a torch or sweat copper.”
- “What people in industry want is a Journeyman with an ASD. Now you have a dilemma... in 2006, now they are pushing academics at the same time they are pushing skills. Academia is somewhat in conflict with industry. The career paths you go on for the field of study compared to how good that person can perform in that field in industry. Where that really catches up with you is at the Craft (Skilled Trades) level and so the industry says they want somebody with an Associates Degree and good skills training. The question is can we find an institution that has an accreditation that meets academia’s requirements that will issue an Associates Degree that will allow you to instruct people in skilled trades.”
- “They want you to have an engineering degree with extensive PLC experience and knowledge. I have been here five years, do you know how many times I have been inside a PLC? Zero. You don’t do it, but they want you to have the degree.”

- “It would feel awkward walking around campus with my son.”

Workforce Retention Impacted by Low Pay, Regional Image, and Aging Workers

The Phase 1 report for the SSI initiative reflected the low wages paid in this area compared to other labor markets within Indiana. Workers know the region is not competitive in terms of wages. Participants in our focus groups indicated they were only here because of family.

2004 Wages for Industrial Machinery Mechanics		
	Average Hourly Wage	Average Annual Wage
Indianapolis	\$22.11	\$45,990
Indiana	\$21.07	\$43,820
Fort Wayne	\$19.78	\$41,150
South Bend	\$19.32	\$40,180
National	\$19.28	\$40,090
Lafayette	\$18.39	\$38,240
Terre Haute	\$17.38	\$36,150
Elkhart	\$17.23	\$35,840
Evansville	\$17.14	\$35,650

Growing your own maintenance workforce is made more difficult because of the wage issue and the fact that advancing into maintenance can cost a worker money. Focus group participants said:

- “What hurts the apprentices is that they are into their family years and they are working overtime. They get in the apprenticeship program and they basically go [down] to 40 hours per week, at least for the first three months...They basically end up taking a minimum of \$20,000 per year pay cut.”
- “People are not coming into the apprenticeship program because they have positions that are close to the mechanic wage. They don’t want to take the pay cut to go into the program when they can move to one of the positions that pays almost the same and they have the ability to get job pay raises while the mechanics, electrical and maintenance are topped out in the position. That really deters a lot of people from getting into the apprenticeship program.”

The aging workforce has been well documented in many publications as a cause for current and future skill shortages.

“The baby boom generation, the last one that produced significant numbers of craftspeople, is retiring. Between the retirements and the scarcity of entry-level craftspeople, we have a severe and accelerating crisis – a nationwide shortage of technically qualified people for our manufacturing industries.

“It is a dual shortage: 1. a shortage of qualified, technically skilled managers to supervise plants, and 2. a shortage of qualified, technically skilled craftspeople to operate and maintain plants.

“If present trends continue, our deficit in skilled, educated people to operate and maintain manufacturing facilities will worsen at a time when technological change continues to make plants more automated. Exacerbating this trend, transfer of knowledge from seasoned professionals to their replacements happens less and less.”²⁸

In Region 11, the percentage of “older workers” (age 45-54 and age 55-64) are higher in manufacturing than they are for all industries.

Region 11 Aging Workforce

	% of Workforce Age 45-54	% of Workforce Age 55-64
All NAICS sectors	23.7%	12.1%
Manufacturing	26.1%	12.6%
Source: Local Employment Dynamics		

In one focus group the maintenance workers pointed out to us their ages. There was only one truly young person in the group. They recognize that finding a new pipeline or supply will be difficult because of the low wages.

²⁸ “Tackling the Skills Shortage,” Gary Johnson, National Technology Transfer; June, 2004; <http://www.mt-online.com/articles/0603nttskills.cfm>